



RAPHA EXAMINATIONS BOARD

P.7 EXAMINATION 2024

REAL MOCK SET 1

MARKING GUIDE FOR MATHEMATICS

Email: raphaexaminationsboard@gmail.com

SECTION A

$$1. \begin{array}{r} & 1 \\ & + 4 & 2 & 4 \\ & \hline 4 & 4 & 6 \\ \hline & 8 & 7 & 0 \end{array} \quad \begin{array}{l} \text{SIX} \\ 4+6=10 \\ 1+2+4=7 \\ 4+4=8 \end{array}$$

$$2. 59^\circ + s + 63^\circ = 180^\circ \\ s + 122^\circ = 180^\circ \\ s + 122^\circ - 122^\circ = 180^\circ - 122^\circ \\ s = 58^\circ$$

$$3. 1\text{km} = 1000\text{m} \\ 2.3\text{km} = 2.3 \times 1000\text{m} \\ 2.3\text{km} = \frac{23}{10} \times 1000\text{m} \\ 2.3\text{km} = 2300\text{m}$$

$$4. 5m - (2+m) \\ 5m - 2 - m \\ 5m - m - 2 \\ 4m - 2$$

$$5. \begin{array}{r} 1 \overset{2}{\cancel{0}} 6 \\ \times \quad 4 \\ \hline 4 \quad 2 \quad 4 \end{array}$$

$$6. 4P - 8 = 16 \\ 4P - 8 + 8 = 16 + 8 \\ 4P = 24 \\ \frac{4P}{4} = \frac{24}{4} \\ P = 6$$

$$7. \frac{1}{2} \times \frac{1}{4} = \frac{1 \times 1}{2 \times 4} \quad (\text{Numerator product out of denominator product}) \\ = \frac{1}{8}$$

OR (diagrams) Double shaded

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$

$$8. \begin{array}{c|c|c} B & N & R \\ \hline 2 & 5 \\ \hline 2 & 2 & 1 \\ \hline 1 & 0 \end{array} \quad 5_{\text{ten}} = 101_{\text{two}}$$

$$9. \text{Let the complement be } y \\ y + 78^\circ = 90^\circ \\ y = 90^\circ - 78^\circ \\ y = 12^\circ$$

The complementary angle is 12°

10. Total - 60 pupils
 Boys - 12
As a percentage

$$\frac{12^2}{60} \times 100\% = 20\%$$

11. $P = \{1, 2, 3, 4, 8\}$
 $P \cup Q = \{1, 2, 3, 4, 5, 6, 7, 8\}$
 $Q(\text{only}) = \{5, 6, 7\}$
 $n(Q)_{\text{only}} = 3$

12. $\frac{6x}{6} = 5$
 $1 \cancel{\frac{6}{6}} x = 5$
 $x = 5$

13. *Accept listing as well

2	8	20
2	4	10
2	2	5
5	1	5
1	1	1

$lcm = 2 \times 2 \times 2 \times 5$
 $lcm = 40.$

14. $A = \text{base} \times \text{height}$
 $A = 10 \text{ cm} \times 6 \text{ cm}$
 $A = 60 \text{ cm}^2$

15. 4 books costed sh \$,000
 1 book would cost $\frac{\text{sh } \$,000}{4}$
 & similar books will cost
 $\frac{\text{sh } \$,000}{4} \times 2$
 $\text{sh } 16,000$

16. $C \cap D = \{b, e, 5, f\}$
 $n(C \cap D) = 4$

17. $\frac{3}{5}$ as percentage
 $= \frac{3}{5} \times 100\% = 60\%$
 $= \frac{3}{5} \times 20\% = 12\%$
 $= 3 \times 20\% = 60\%$

18.

Thousands	units
444	350

Four hundred forty four thousand, three hundred fifty

19. Profit = SP - BP

$$\text{Profit} = \text{Sh. } 1,000,000 - \text{Sh. } 600,000$$

$$\text{Profit} = \text{Sh. } 400,000$$

20. The average of 4 = 12

$$\begin{aligned}\text{Total age of 4} &= 12 \times 4 \\ &= 48 \text{ years}\end{aligned}$$

$$\text{Age of one boy} = 10 \text{ years}$$

$$\begin{aligned}\text{Total age of the 3} &= 48 - 10 \\ &= 38 \text{ years}\end{aligned}$$

SECTION B

21. Percentage decline of the population.

Decline

$$5100,000 \text{ residents}$$

$$- 467,000 \text{ residents}$$

$$\underline{33,000 \text{ residents.}}$$

$$\% \text{ decline} = \frac{\text{decline}}{\text{original no.}} \times 100\%$$

$$\% \text{ decline} = \frac{6,000}{33,000} \times 100\%$$

$$\% \text{ decline} = 6\frac{3}{5}\% \text{ or } 6.6\%$$

22. No of trees = $\frac{\text{Perimeter}}{\text{interval}}$

$$\text{Perimeter} = \frac{1}{2} \pi D + D$$

$$\text{Perimeter} = \left(\frac{1}{2} \times \frac{22}{7} \times 21 + 21 \right) \text{m}$$

$$\text{Perimeter} = (33 + 21) \text{m}$$

$$\text{Perimeter} = 54 \text{m}$$

54m to cm

$$1 \text{m} = 100 \text{cm}$$

$$54 \text{m} = 54 \times 100 \text{cm}$$

$$54 \text{m} = 5400 \text{ cm.}$$

No of trees.

$$\left(\frac{30}{5400 \text{ cm}} \right) \text{ trees}$$

30 trees.

23. Let the numbers be y and x

$$y + x = 10$$

$$y - x = 4$$

using Substitution

$$y - x = 4$$

$$y = 4 + x$$

$$y = 4 + x$$

$$y + x = 10$$

$$4 + x + x = 10$$

$$\begin{aligned}
 4+2x &= 10 \\
 2x &= 10-4 \\
 2x &= 6 \\
 \frac{2x}{2} &= \frac{6}{2} \\
 x &= 3
 \end{aligned}$$

Value of y

$$y = 4+x$$

$$y = 4+3$$

$$\underline{y = 7}$$

∴ The numbers are 3 and 7

b) Lcm of 3 and 7

$$\begin{array}{c|cc}
 3 & 3 & 7 \\
 \hline
 7 & 1 & 7 \\
 \hline
 & 1 & 1
 \end{array}$$

$$= 3 \times 7$$

$$= 21$$

$$\text{Total} = (900 + 520 + 380) \text{ Kshs}$$

Year one	Year 2	Year 3
$\frac{2}{900} \times 360$	$\frac{2}{520} \times 360$	$\frac{2}{380} \times 360$
180°	104°	76°



Denomination	Notes/coins	Amount
Sh 50,000	4 notes	Sh 200,000
Sh 20,000	15 notes	Sh 300,000
Sh 5,000	3 notes	Sh 15,000
Sh 500	20 coins	Sh 10,000

Sh 50,000 × 4	Sh 200,000	Sh 5,000
	15 notes	Sh 1,500

$$\text{Sh } 500 \times 20$$

$$\text{Sh } 10,000$$

b) New amount

Amount deposited + old amount
the deposited

New amount
Sh 300,000
Sh 200,000
Sh 15,000
Sh 10,000
Sh 525,000
+ Sh 103,900
<u>Sh 628,900</u>

26) a) 2 groups of five fives and 4 ones
 $= 20 + 4$ five
 $\underline{\underline{= 204}}$

b) Value of 4

$$V = d \times p \times v$$

$$V = 4 \times \text{tens}$$

$$V = 4 \times 10$$

$$V = 40$$

c) 1 dozen = 12 pens

$$12 \cdot 5 \text{ dozens} = 12 \cdot 5 \times 12 \text{ pens}$$

$$12 \cdot 5 \text{ dozens} = 150 \text{ pens}$$

27) a) Applying GCF

2	90	120	150
3	45	60	75
5	15	20	25
	3	4	5
	(any one of them)		

$$2 \times 3 \times 5$$

$$30$$

The mass of the biggest pack is 30 kg

Let the second number be p .

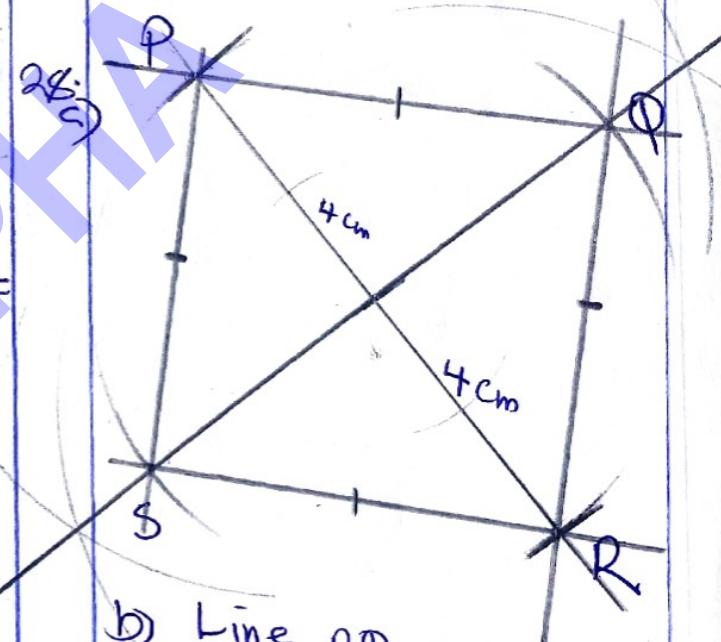
$$\text{1st no.} \times \text{2nd no.} = \text{Lcm} \times \text{GCF}$$

$$8 \times p = 72 \times 12$$

$$8p = 864$$

$$\frac{8p}{8} = \frac{864}{\cancel{8}}$$

$$p = 108$$



b) Line $PQ = 5.5 \text{ cm}$

(Accept 5.4 or 5.6 cm)

NB: Sketch is a Must in this kind of construction (carries 1 mark)

29

TSA is given 460cm^2

$$2(LW) + 2(LH) + 2(WH) = \text{TSA}$$

$$2(10 \times 5) + 2(10 \times 5) + 2(5 \times 5) = 460\text{cm}^2$$

$$2(10L) + 2(5L) + 2(50\text{cm}^2) = 460\text{cm}^2$$

$$20L + 10L + 100\text{cm}^2 = 460\text{cm}^2$$

$$30L + 100\text{cm}^2 = 460\text{cm}^2$$

$$30L = 460\text{cm}^2 - 100\text{cm}^2$$

$$30L = 360\text{cm}^2$$

$$\frac{130\text{cm}}{36\text{cm}} = \frac{12}{y}$$

$$L = 12\text{cm}$$

 \therefore The length is 12cm

$$1260^\circ = 180n - 360^\circ$$

$$\frac{1260^\circ + 360^\circ}{180^\circ} = 180n$$

$$1620^\circ = 180n$$

$$\frac{1620^\circ}{180^\circ} = n$$

$$9 = n$$

No. of triangles

$$= n - 2$$

$$= 9 - 2$$

= 7 trianglesb) from no. of sides

$$n = \frac{360^\circ}{40^\circ}$$

$$9y = 360^\circ$$

$$\frac{9y}{9} = \frac{360^\circ}{40^\circ}$$

$$y = 40^\circ$$

@Exterior angle is 40° 30 a) Interior angle sumis 1260°

$$\text{Int Asum} = 180(n-2)$$

$$\text{Int Asum} = 1260^\circ$$

$$1260^\circ = 180(n-2)$$

31. (a) Let the son's age now be W

Time frame	Nahita	The son
Now	$W+20$	W
10 yrs time	$W+20+10$ $= W+30$	$W+10$

In 10 yrs Father will be twice son

$$W+30 = 2(W+10)$$

$$W+30 = 2W+20$$

$$W+30 = 2W+20$$

$$W-2W = 20-30$$

$$-W = -10$$

$$\frac{+W}{T_1} = \frac{+10}{T_1}$$

$$W = 10$$

The son now

$$= W$$

$$= 10 \text{ years.}$$

(b) Father in 10 yrs time:

$$= (W+30) \text{ years}$$

$$= (10+30) \text{ years}$$

$$= 40 \text{ years.}$$

32.

Amount deposited

$$\text{Sh. } 2,300,500$$

Interest offered

$$\text{Sh. } 1,500 \text{ monthly}$$

Time taken

$$5 \text{ years.}$$

Interest yielded in 5 yrs

$$\text{Sh. } 1500 \times 5 \times 12$$

$$\text{Sh. } 90,000$$

Amount on the account after 5 years.

$$\begin{array}{r} \text{Sh. } 2,300,500 \\ + \text{Sh. } 90,000 \\ \hline \text{Sh. } 2,390,500 \end{array}$$